

**REMARKS**

Claims 1-22 are pending in the above-referenced patent application. Claims 1, 2, 10-14 and 22 were rejected under 35 U.S.C. 102(e) as being anticipated by US 2002/0027610 to Jiang et al. ("Jiang"). Claims 3, 7, 9, 15 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang. Claims 14 and 15 were objected to due to dependency issues. Claims 14 and 15 have been amended for correction. No new matter has been added.

Claims 5, 6, 16 and 17 were deemed allowable if written in independent form including limitations of base claims and any intervening claims. Applicant wishes to thank the Examiner for detailing the allowable claims.

Claims 1-4, 7-15 and 19-22 were provisionally rejected under 35 U.S.C. 102(e) as being anticipated by copending Application No. 10/003,391. It is respectfully noted that this application and copending Application No. 10/003,391 were invented by the same two inventors (Yeong-Taeg Kim and Shin-Haeng Kim), and were assigned to the same entity (Samsung Electronics Co., Ltd.), as is clear from the Declaration and Assignment documents in this patent application and the copending Application No. 10/003,391. As such, provisional rejection of Claims 1-4, 7-15 and 19-22 under 35 U.S.C. 102(e) as being anticipated by copending Application No. 10/003,391, should be withdrawn.

Further, Claims 1-4, 7-15 and 18-22 of this patent application were deemed in conflict with claims 1-4, 6-14 and 16-19, respectively, of copending Application 10/003,391. Claims 1-3, 6-14, and 16-19 have been canceled from the copending Application No. 10/003,391. With respect to Claim 4 in this application and the copending Application No. 10/003,391, it is respectfully submitted that the claims are patentably distinct. Specifically, Claim 4 in the copending Application No. 10/003,391 states, in relevant part:

“... wherein the step of forming the point-wise motion detection signal comprises computing

$$f_n(i, h) = T_K(d_n(i, h))$$

where  $f_n$  is the point-wise motion detection signal,  $i$  and  $h$  define a spatial location of the respective video signal value in a cartesian matrix,  $T_K(\cdot)$  denotes a threshold function represented as

$$T_K(y) = \begin{cases} 1, & \text{if } y \geq K \\ 0, & \text{otherwise} \end{cases}$$

in which  $K$  is a positive constant, and  $d_n(\cdot)$  is the low-pass filtered frame difference signal.”

By contrast, Claim 4 in this application states, in relevant part:

“... wherein the step of forming the point-wise motion detection signal comprises computing

$$f_n(i, h) = l_K(d_n(i, h))$$

where  $f_n$  is the point-wise motion detection signal,  $i$  and  $h$  define a spatial location of the respective video signal value in a cartesian matrix,  $l_K(\cdot)$  denotes a linearly scaling function represented as

$$l_K(y) = \begin{cases} 1, & \text{if } y \geq K \\ y/K, & \text{otherwise} \end{cases}$$

in which K is a positive constant value.”

Clearly, at least the expression  $T_K(y) = \begin{cases} 1, & \text{if } y \geq K \\ 0, & \text{otherwise} \end{cases}$  in Claim 4 of the

copending Application No. 10/003,391 and the expression  $I_K(y) = \begin{cases} 1, & \text{if } y \geq K \\ y/K, & \text{otherwise} \end{cases}$  in

Claim 4 of this patent are patentably distinct. As such no conflict remains between the claims of this patent application and the copending Application No. 10/003,391.

#### **Rejection of Claims 1, 2, 10-14 and 22 under 35 U.S.C. 102(e)**

Rejection of Claims 1, 2, 10-14 and 22 under 35 U.S.C. 102(e) as being anticipated by Jiang is respectfully traversed because, for at least the following reasons, Jiang does not disclose all of the claimed limitations.

As per **Claim 1**, despite the Patent Office’s interpretation of Jiang’s motion detector 109, Jiang does not disclose: “forming a point-wise motion detection signal from the frame difference signal,” as required by Claim 1. Nor does Jiang disclose: “computing a region-wise motion detection signal from the point-wise motion detection signal and an adjacent point-wise motion detection signal delayed by one field,” as required by Claim 1.

The Patent Office has simply referred to the motion detector 109 without more, as disclosing the claimed limitation. The Patent Office has not met its burden of showing that the claimed limitation is disclosed by Jiang. If Claim 1 is once again rejected, it is respectfully requested that the Patent Office point to specific disclosure in Jiang where the claimed limitations.

Further, on page 2, paragraph 27, Jiang describes the motion detector 109 in detecting motion of a missing pixel as follows:

*“Motion detector 109 actually filters the pixel luminance value differences from pixel difference unit 107 to remove aliases occurring under motion conditions. Moreover, it should be noted that all the pixel luminance value differences noted above might not be used in determining the motion of the missing pixel. The motion metric  $\Delta$  at a missing pixel may be defined by employing some combination of the obtained pixel luminance value differences, for example, by  $\Delta = \max(\Delta_c, \Delta_a)$ . Other combinations of the pixel luminance value differences may also be used to obtain the motion metric at the missing pixel, for example,  $\Delta = \max(\Delta_c, \min(\Delta_n, \Delta_s))$ , is employed in motion detector 109 in this implementation. Note that the use of  $\min(\Delta_n, \Delta_s)$  reduces the spreading of spurious motion in a vertical direction of the image. It is also important to note that our implementation is significantly simplified because the motion values are computed directly from the pixel luminance value differences *employing the minimum and maximum value choices*.”* (emphasis added).

As is clear from the above passage, the motion detector 109 does not form a point-wise motion detection signal from a frame difference signal, as claimed herein. There is no such disclosure anywhere in Jiang. The motion detector 109 computes motion values using the min/max value choices of pixel luminance value differences. Nor does the motion detector 109 compute a region-wise motion detection signal from the point-wise motion detection signal and

an adjacent point-wise motion detection signal delayed by one field, as claimed herein. For at least these reasons, rejection of Claim 1 and all claims dependent therefrom should be withdrawn. Similarly, rejection of **Claim 13** should be withdrawn for at least the above reasons.

**Claim 2** adds further limitations to Claim 1, not disclosed by Jiang, and is therefore allowable for the same reasons as provided in relation to Claim 1. Similarly, rejection of **Claim 14** should be withdrawn for at least the above reasons.

**Claim 10** includes limitations of Claim 1, and further limitations, not disclosed by Jiang and is therefore allowable for at least the reasons provided in relation to Claim 1. Similarly, rejection of **Claim 22** should be withdrawn for at least the reasons provided in relation to Claim 10.

As per **Claim 11**, despite the Patent Office's interpretation, Jiang, paragraph 42, does not disclose: "varying the motion decision value between 0 and 1 as a function of an estimate of the degree of motion at the given location and, upon estimating a high degree of motion, heavily weighting the output signal towards the spatially interpolated signal and, upon estimating a low degree of motion, heavily weighting the output signal towards the temporally interpolated signal," as required by Claim 11. In paragraph 42, Jiang shows the motion metric values varying between 0 and 8, not between 0 and 1, as claimed. Further, the blending factor in Jiang is not the

same as the motion decision value as claimed. In addition, as claimed, upon estimating a high degree of motion (e.g., motion decision close to 1), the output signal is heavily weighted towards the spatially interpolated signal, and upon estimating a low degree of motion (e.g., motion decision close to 0), the output signal is heavily weighted towards the temporally interpolated signal. By contrast, the blending factor in Jiang has the values of 0 for motion metric values 0 and 1. For at least these reasons, rejection of Claim 11 should be withdrawn. Further, in paragraph 43, Jiang states that any motion metric value of less than 4 yields a blending factor of 0 and any motion metric value of 8 or more yields a blending factor 1. For at least these reasons, rejection of **Claim 12** should be withdrawn.

**Rejection of Claims 3, 7, 9, 15 and 19 under 35 U.S.C. 103(a)**

Rejection of Claims 3, 7, 9, 15 and 19 under 35 U.S.C. 103(a) as being unpatenable over Jiang is respectfully traversed because not all of the limitations of the claims are disclosed or suggested by the reference.

As per **Claim 3**, as the Patent Office also states, Jiang does not disclose the low-pass filter matrix as claimed herein. Further, no such low-pass filtering matrix is suggested by Jiang. There is no suggestion in Jiang to modify it as the Patent Office does. It is well settled that in order for a modification or combination of the prior art to be valid, the prior art itself must suggest the modification or combination, "...invention cannot be found obvious unless there was

some **explicit** teaching or suggestion in the art to motivate one of ordinary skill to combine elements so as to create the same invention.” *Winner International Royalty Corp. v. Wang*, No. 96-2107, 48 USPQ.2d 1139, 1140 (D.C.D.C. 1998) (emphasis added). “The prior art **must provide** one of ordinary skill in the art the **motivation** to make the proposed molecular modifications needed to arrive at the claimed compound.” *In re Jones*, 958 F.2d 347, 21 USPQ.2d 1941, 1944 (Fed. Cir. 1992) (emphasis added). Jiang does not suggest the motivation to modify it as proposed. Jiang is individually complete and functionally independent for its limited specific purposes and there would be no reason to make the modification proposed by the Patent Office. Therefore, because Jiang does not suggest the modification proposed by the Patent Office the modifications is improper. Further, it is respectfully submitted that the Patent Office is improperly using “hindsight” and the teachings of Applicant’s own claimed invention in order to modify Jiang to render Applicants’ claims obvious. In addition, if the claimed matrix is so well known, it is respectfully requested that the Patent Office provide a source which shows such a matrix. No prima facie case of obviousness has been established. For at least these reasons, rejection of Claim 3 should be withdrawn. For similar reasons, rejection of **Claim 15** should be withdrawn.

As per **Claim 7**, as the Patent Office also states, Jiang does not disclose low-pass filtering the region-wise motion detection signal prior to the outputting step, as required by Claim 7. As noted in relation to Claim 1, Jiang does not disclose forming a point-wise motion detection signal

and then computing a region-wise motion detection signal from the point-wise motion detection signal and an adjacent point-wise motion detection signal delayed by one field. Clearly the, Jiang cannot, and does not disclose, low-pass filtering the region-wise motion detection signal before output. There is no such component in Jiang. The Patent Office has not provided a reference that teaches such a limitation, and summarily deciding that the claimed limitation is obvious, and a matter of design choice, without meeting its burden. No prima facie case of obviousness has been established. Jiang does not suggest the motivation to modify it as proposed. Jiang is individually complete and functionally independent for its limited specific purposes and there would be no reason to make the modification proposed by the Patent Office. Therefore, because Jiang does not suggest the modification proposed by the Patent Office the modifications is improper. The LPF 108 in Jiang has nothing to do with low-pass filtering the region-wise motion detection signal prior to the outputting step, as claimed. Further, it is respectfully submitted that the Patent Office is improperly using “hindsight” and the teachings of Applicant’s own claimed invention in order to modify Jiang to render Applicants’ claims obvious. For at least these reasons, rejection of Claim 7 should be withdrawn. For similar reasons, rejection of **Claim 19** should be withdrawn.

As per **Claim 9**, as the Patent Office also states, Jiang does not disclose the claimed limitations. However, the Patent Office relies on its lacking reasoning in relation to Claims 3 and 15 to reject Claim 9. Jiang does not disclose the low-pass filter matrix as claimed. Further, no



such low-pass filtering matrix is suggested by Jiang. There is no suggestion in Jiang to modify it as the Patent Office does. The selected coefficients provide better results and are not arbitrary. Further, it is respectfully submitted that the Patent Office is improperly using "hindsight" and the teachings of Applicant's own claimed invention in order to modify Jiang to render Applicants' claims obvious. No prima facie case of obviousness has been established. For at least these reasons, and the reasons provide above in relation to Claims 3 and 7, rejection of Claim 9 should be withdrawn.

### Conclusion

For these and other reasons, it is respectfully submitted that the rejection of the rejected claims should be withdrawn, and all of the claims be allowed. Accordingly, reexamination, reconsideration and allowance of all the claims are respectfully requested.

The Commissioner is hereby authorized to charge any payment, or credit any overpayment, to Deposit Account No. 01-1960, in connection with this reply.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Services first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on June 15, 2004  
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